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ABSTRACT

To encourage an explicit and more complete statement of policy and objectives so that the universities would have improved opportunities to plan intelligently for the future, the Council of Ontario Universities (COU) prepared this brief to suggest to the Ontario Council on University Affairs (OCUA) some factors to be taken into account in establishing objectives and policy for capital financing. Among the objectives deemed paramount by the Committee are the following: the adaptation of the existing physical plant to meet changing needs, the preservation of the physical plant for requisite quality and performance, the replacement of equipment and furniture for requisite quality and performance, and the accommodation of present enrollment and anticipated growth in overall enrollment. Suggested government policy to support objectives are these: fund cyclic renewal (to include renovations, alterations, and the replacement of furniture and equipment), fund new space as necessary, and fund the rental of temporary space or the purchase or rental of portable space. The brief also lists factors to be considered in planning for the implementation of the policy and aids or prerequisites to capital planning and the equitable distribution of funds. Appendices contain three previous COU submissions on capital financing. (JT)

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CAPITAL SUPPORT: OBJECTIVES, POLICY, IMPLEMENTATION

Brief to the Council of Ontario Universities

Prepared by

Committee on Capital Financing

Council of Ontario Universities
Conseil des Universités de l'Ontario
130 St. George Street, Suite 8039
Toronto, Ontario M5S 2T4

April 30, 1976

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COUNCIL OF ONTARIO UNIVERSITIES
CONSEIL DES UNIVERSITÉS DE L'ONTARIO

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May 3, 1976

Dr. J. Stefan Dupré
Chairman
Ontario Council on University Affairs
801 Bay Street, 2nd Floor
Toronto, Ontario

Dear Dr. Dupré:

In connection with the discussion of capital policy scheduled for the May 14-15 OCUA hearings with the universities, I am pleased to transmit on behalf of the Council a brief entitled: Capital Support: Objectives, Policy, Implementation. Bound with the brief as appendices are three previous COU submissions on capital financing.

The enclosed document was prepared by the Committee on Capital Financing, and approved for transmittal to OCUA by the COU Executive Committee, since time did not permit a review at a meeting of the full Council.

You will note that the brief outlines three alternatives to the funding of furniture and equipment replacement. There is some difference of opinion amongst the universities on which approach would be preferable. The Executive Committee recommends to OCUA that the second alternative, based on the present MCU practice, be chosen.

Sincerely,

John B. Macdonald
Executive Director

JBM:jf

Encl.

I Introduction

The Committee on Capital Financing would again like to draw attention to its earlier recommendations for the need of a set of policies and procedures governing the allocation and distribution of capital funds for Ontario universities. In its Advisory Memorandum 74-IV the Ontario Council on University Affairs spoke of "an immediate need for enunciated government objectives in capital assistance". This matter was raised again in Advisory Memorandum 75-VI in which OCUA made the point that there was an even more urgent need for a basic government policy in the realm of capital finance, at least for the next decade and perhaps for the balance of the century. A number of the elements of a possible policy in the capital area are raised by way of questions in the introduction to OCUA's Second Annual Report which will be published in the near future. In this report OCUA suggests that the temporary suspension of the Interim Capital Formula, and the capital support based upon it, had now gone on for such a long period of time as to generate a policy vacuum.

The evidence is quite clear from government behaviour during the suspension of the formula that the policy in fact is to provide little or no funding for new space, i.e., additional or replacement. Evidence for this was included in the recent Speech from the Throne in which it was stated that "unnecessary expansion of colleges, universities, schools, hospitals and other major capital projects will be curtailed whenever possible".*

During these times of financial constraint it is easy to understand government's reluctance to provide additional space; however, there still remains the unanswered question of how to provide the funds for necessary new space and for alterations and renovations of existing space (i.e.,

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* Ontario Debates, March 9, 1976, p. 180.

cyclic renewal). An explicit and more complete statement of policy and objectives would improve the opportunities for the universities to plan intelligently for the future, and the Committee on Capital Financing would support and encourage OCJA and the government in this direction.

The purpose of this brief paper then is to respond to some of the questions in the 'Introduction' to the Second Annual Report of OCUA and to suggest some factors to be taken into account in establishing objectives and policy for capital financing. In reflecting on these, it seemed to the Committee that objectives might be considered first, then a policy for achieving these objectives, and finally planning for the implementation of the policy.

II Capital Support Objectives

Among the objectives deemed to be paramount by the Committee are the following:

a) The adaptation of the existing physical plant to meet changing needs. Even in the context of level or decreasing student enrolments, physical plants will require alterations to adjust to changes in the distribution of student enrolment within and among institutions, to changes in the methodology of instruction and research, and to changes in code requirements. There is the need to reduce energy consumption which necessitates changes in building systems. Besides the societal expectations that this be done, such a programme will assist universities to maintain an acceptable level of operating costs and hopefully reduce such expenditures.

b) The preservation of the physical plant for requisite quality and performance. Both buildings and building elements wear out or become obsolete and require replacement. Even when annual repairs are made in a systematic way, there comes a time when systems need to be replaced. However, it is of prime importance for Ontario universities to preserve the physical plant they currently possess.

c) The replacement of equipment and furniture for requisite quality and performance. Furniture and instructional and research equipment require periodic replacement and are very important elements in the maintenance of quality and performance of an academic enterprise. Since some such expenditures were included in capital allocations during original construction or renovation of buildings, the requisite funds for replacement have not been found in operating grants. There is a concern, which appears to be justified, that institutions are unable to adequately maintain furniture and equipment in the face of other pressures on available operating funds.

d) The accommodation of present enrolment and anticipated growth in overall enrolment. Some universities do not feel that they possess adequate space for present enrolments and are concerned about accommodating enrolment increases. Almost all forecasters agree that university enrolments will be increasing during the next five or six years. There is less agreement as to how sharp the subsequent decline will be. Whether the growth over the next few years is judged to be temporary or not, some means must be found to accommodate it. The most likely means would include some combination of new space, rental or acquisition of temporary space, whether on or off campus; more effective use of existing space; and perhaps even overloading or overworking of existing space for limited period.

III Suggested Government Policy to Support Objectives

a) Fund cyclic renewal in order to meet objectives (a), (b) and (c) above. Building Blocks Number 5 defines cyclic renewal to include renovations, alterations and the replacement of furniture and equipment. The present position of the government and OCUA seems to be in support of this principle and some funds have been provided for this. HOWEVER THERE ARE NO APPROVED MECHANISMS FOR (i) ESTABLISHING THE MAGNITUDE OF THE CYCLIC RENEWAL FUNDS NEEDED, OR (2) FOR ENSURING AN EQUITABLE DISTRIBUTION THROUGHOUT THE SYSTEM OF THE FUNDS CURRENTLY MADE AVAILABLE. Part of the difficulty stems from a lack of agreement as to what portion of the cyclic renewal funds should come via capital support and what portion via operating grants. This question will be dealt with in more detail below. As to the magnitude of the support required, this has been addressed in Building Blocks Number 5, and in other reports to CUA and OCUA* (Appendices A-C) and interim figures have been recommended for the various components. The present study of life costs of building, which is being pursued actively should enable us to recommend more concrete figures. We have as yet no new information which would enable us to improve upon our previous estimates and we can only reaffirm that in our view they continue to be reasonable.

b) Fund new space as necessary. It is anticipated that some universities will receive more than their share of the projected growth and will

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* Ontario University Requirements for Cyclic Renewal Funds forwarded to CUA under covering memorandum from B. L. Hansen dated January 24, 1974.
Capital Financing: Funding by Formula and Cyclic Renewal, October, 1974.
Report from the Committee on Capital Financing forwarded to OCUA under covering letter from John B. Macdonald dated August 13, 1975.

not be able to cope with the increase without new space. The freeze on funding has left some universities with an inadequate amount of space or a poor fit of special-purpose space to the functions for which it is required. Where this lack of fit cannot be corrected sensibly through alterations, new space may be justified. The same applies to old buildings. There may be cases where outmoded buildings cannot be renovated and altered at reasonable cost and where demolition and replacement is the better alternative. Finally, the space needed to house library materials grows almost independently of enrolment; additions to on-campus libraries and/or the provision of regional depository libraries will be necessary.

c) Fund the rental of temporary space or the purchase or rental of portable space. If the magnitude of that part of the enrolment hump which is temporary can be estimated, it may be in the general interest to acquire or rent "portables" or to rent off-campus space as a bridging measure and as a preferable alternative to the construction of new space. There is some concern however that due to the severity of winter temperatures the modifications that are needed to keep portables heated may markedly deteriorate the economy of such space.

IV Planning for the Next Decade

In order to achieve the objectives set forth above, whether through the implementation of the policy also suggested above or through some alternative policy, there are certain aids or prerequisites which should be provided first and a number of factors to be given prior consideration.

a) Factors to consider in capital planning and distribution:

(1) Demographic trends - more work in the area of projecting traditional enrolment patterns by region should enable each

university to plan more intelligently than if it depends solely on overall projections for the province.

(2) Participation rates - changes in the participation rates of either full-time or part-time students could have a considerable impact on the needs for space and capital resources. Also, the entry of students from those beyond the 18 - 24 year age group could offset the effects of projected declining enrolments after 1985. Planning becomes almost impossible unless there is a consensus as to the shape and approximate height of the enrolment graph for the next decade.

(3) Accessibility policy - it is quite clear that the government is committed in principle to making universities accessible to those who would otherwise be denied such opportunities because of economic disadvantages. However since such a policy is directly related to student aid and scholarships, level of tuition fees, numbers and kinds of academic programmes, support for research, etc., the government has yet to communicate clearly and unequivocally what the parameters of accessibility happen to be. The effects of accessibility on future enrolment patterns is self-evident.

(4) Availability and accessibility of temporary space - an examination of the availability of space in the vicinity of each university surplus to the needs of its present users, e.g. high schools, CAAT's, and the studies of the feasibility of using such space should be conducted. Even though classroom space would be one of the easier adaptations of rental space for

for university use, it only constitutes about 11% of present university space. The following are approximate current space allocations in the system: instructional offices (16%); administrative offices (7%); classroom-laboratory (15%); research (14%); library (14%); physical education (6%); general (12%); and special use (4%). It is difficult to assess at present the possibility of utilizing rental space for all university functions, but even if half of the needs could be met through the use of temporary space, there are concerns that operating costs may increase due to logistical disadvantages.

(5) Elements to be included in capital support as distinct from operating grants - this problem arises primarily in connection with cyclic renewal, a subject which has been addressed in the previous submissions to CUA and OCUA footnoted earlier in this paper. We will not repeat here the material included in those submissions.

There has never been agreement on what components of cyclic renewal should be covered by capital funds and what components by operating funds. The two chief areas of uncertainty relate to the maintenance/preservation of plant generally and to the replacement of furniture and equipment. In this context equipment refers to instructional and research equipment, not to equipment which makes up the mechanical and electrical systems of buildings. The cost of the latter has always been regarded as properly a charge against capital.

MCU has used an arbitrary but on the whole a workable rule to separate maintenance costs, to be borne from operating, from alterations and renovations which are eligible for capital support.

According to MCU practice a project is eligible for capital support only if its estimated cost exceeds $25,000. We would recommend that this policy be continued on an interim basis only until some acceptable definitions are set.

The question of where to charge furniture and equipment replacement is more difficult. Furniture/equipment costs have in the past been eligible for capital support when associated with new construction. Universities have also spent operating funds on equipment and furniture. Previously the Committee on Capital Financing, supported by COU, has recommended that furniture and equipment replacement be funded from capital via a cyclic renewal allowance. MCU, however, has followed the practice of treating furniture and equipment as eligible for capital support only if associated with a major alteration or renovation project qualifying under the $25,000 rule or with new construction. Clearly this question begs an answer and at least three alternatives might be considered:

1) Adopt the earlier recommendations of CCF and COU and make equipment and furniture replacement eligible for capital support. Under this alternative, the funds would be earmarked and could not be diverted to other uses.

2) Adopt as a matter of policy the MCU practice. This might be stated less ambiguously to make the cost of replacing furniture and equipment eligible for capital support if it is associated with projects which would cost $25,000 or more before the inclusion of the equipment and furniture costs. It would be up to MCU to satisfy itself that the sums requested for equip-

ment and furniture were reasonable for the project involved. Under this alternative the funds for the replacement of furniture and equipment associated with approved projects would be earmarked. The universities would have to finance all other replacements from operating income. Should this alternative be adopted, the universities should be expected to establish reserve funds carried over from one year to the next to finance equipment replacement.

3) Adopt a variant of the first alternative under which a part of operating grants would be designated or labelled as that part intended to cover replacement of furniture and equipment but the universities would be free to spend it as they might choose subject only to the general rules covering the use of operating grant moneys.

As indicated earlier, the funding of new space when justified and approved should continue to be from capital funds as should the funding of the replacement of existing but outmoded buildings. For the latter, we suggest that they be treated on an ad hoc basis which would make it incumbent on the individual university to convince MCU of the need to replace a building which has ceased to be functional or cannot be made functional at a reasonable cost.

b) Aids or prerequisites to capital planning and the equitable distribution of funds.

1) Guidelines for the determination and allocation of cyclic renewal funds - These might be included as a component of a capital

formula, but are so significant as to demand special attention. Enough has been said about the need for these in earlier submissions to render any additional comment here unnecessary. Since it seems likely that cyclic renewal requirements will turn out to be correlated to the age of buildings, consideration should be given to obtaining an age profile of the buildings in the system as part of the updated inventory.

2) An updated space inventory - it is some time since the system-wide inventory was taken. Without an updated inventory developed on the basis of a common classification scheme, meaningful comparisons among institutions cannot be made. The classification scheme now exists (revised Building Blocks scheme) and if adopted could be used. COU has recommended it to MCU. It would also be useful if MCU would accept one of the alternative coding schemes proposed by the Committee on Capital Financing.

3) Space and utilization standards - A substantial amount of work has been done in this area and the adoption of standards put forward in the Building Blocks publications and subsequent revisions as a common set would greatly assist in achieving equity. Unless the utilization of existing plants can be assessed and compared on a comparable basis a granting agency will have difficulty deciding upon requests for new space, building replacement, rental or temporary space, or even major alterations to existing space.

4) Appropriately revised and updated space planning and distribution guidelines as a basis for decision-making on capital allocation - Space and utilization standards are not sufficient in themselves,

they must be incorporated into space allocation or space eligibility guidelines (for example, a capital formula) to render possible a fair distribution of capital funds whatever their level. In case of inadequate funding, it would still be possible to achieve equity through the application of a percent reduction in the funds allocated to every eligible institution.

5) The planning organization - OCUA, MCU, COU and individual institutions together with a variety of committees have been and will likely continue to be involved in the planning process. However, the system lacks any clear delineation of the roles and responsibilities with respect to the planning function of the various agencies of this rather complex and loosely connected structure. Unnecessary duplication of effort and loss of time would be avoided if some attention could be given to defining the roles and responsibilities of the various agencies and setting out procedures to be followed.

V Concluding Remarks

The Committee on Capital Financing has been endeavouring over the past year or two to maintain the momentum of the early 1970's with respect to the planning of the capital side of the Ontario university system. No one would argue against the use of planning as an important management tool but the government position on capital planning in recent years is not understandable beyond broad concepts, nor is it predictable. This state of affairs has made capital planning increasingly difficult. Without wishing to exaggerate, the history of financial constraints, coupled

with an uncertain future outlook, seem to have produced a despondent if not depressed attitude which is inhibiting future planning. Perhaps this is general in our society and not confined to the university system, but it does not augur well. The Committee believes that it is essential to break this psychological barrier and reactivate capital planning. As a beginning, we might come to grips with the matters raised by OCUA and commented on in this brief. If the totality of these to too much to contemplate then let us designate a priority order in which they can be tackled and take them one or two at a time.

COUNCIL OF ONTARIO UNIVERSITIES
CONSEIL DES UNIVERSITÉS DE L'ONTARIO

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January 24, 1974

Memorandum

To: Dr. Reva Gerstein

From: B.L. Hansen

Subject: Cyclic renewal

As you know, COU and MCU have had underway an important jointly funded pilot study attempting to develop concepts and approaches to the measurement of all capital costs over the life of university buildings. The study has been conducted by a special task force of the COU Committee on Capital Financing. Representatives of MCU have participated in a most helpful way as technical assessors in the deliberations of the task force but will not be bound by any recommendations which might be made by the Committee on Capital Financing or by COU.

An important part of the study is concerned with determining the amount of capital funds to be provided for cyclic renewal. It was decided this past fall that COU would present a brief to CUA on cyclic renewal, and the Committee on Capital Financing agreed that it should base its brief for COU's approval and presentation to CUA on the section of the Report on Building Life Costs concerned with cyclic renewal.

The attached document, Ontario University Requirements for Cyclic Renewal Funds (Item 1), was considered by COU at its December, 1973, meeting and approved subject to the addition of qualitative information which would reflect the concerns about alterations costs of the older universities. (The life cost pilot study included data from ten of the fourteen Ontario universities - Toronto, Queen's, and Lakehead were not included; Ottawa's data did not allow for analysis.) There was also concern that an unrealistic unit cost of $55 per net assignable square foot was used in the suggested formula for calculating cyclic renewal funds on page 4 of the CCF paper. There is evidence that real unit costs are higher than this figure.

The University of Toronto, in particular, has some concerns about the task force recommendations on cyclic renewal. It is possible that these concerns would be shared by other universities with comparatively older physical plants (such as Queen's and Ottawa) although there have been no specific representations. To reflect the University of Toronto's concerns I have attached the University's responses to recommendations on cyclic renewal made by the Task Force on Building Life Costs (Items 2 and 3) communicated at the January 15 meeting of the Ontario Association of Physical Plant and Planning Administrators (OAPPPA). It should be noted, however, that all recommendations were carried with only a few minor changes.

Memo to Dr. R. Gerstein - January 24, 1974

As you can see, Toronto disagrees with the decision on which components should be included under cyclic renewal and believes that renovations, furniture, and equipment should only be funded from cyclic renewal when they are included in the alteration component. Toronto proposes another definition as shown in Item 3 attached and gives reasons to support this view. Toronto believes that the sample of buildings examined did not reflect properly the costs of changing requirements arising out of age (see Item 4). Toronto recommends an interim allowance of 2% (based on their suggested definition of cyclic renewal) plus funds for code changes. This is in contrast to the Committee recommendation of 2.7% under the Task Force's proposed definition of cyclic renewal.

There are two principal issues here. The first is concerned with what parts of cyclic renewal should be in capital and what parts should be in operating. The second is with the adequacy of discounting for age and quality before applying percentages for cyclic renewal.

In my view it has been demonstrated that the true costs of cyclic renewal, whether from capital or operating, could range from 2.5% to 5% each year. The joint COU/MCU task force finds a range of 2.7% to 4.7%. It is my view also that the needs of the universities which have substantial amounts of space in excess of 40 years of age, for example, may not have been accounted for properly in the task force study. (This is no fault of the task force, since all universities were offered the opportunity to participate in the study.) Certainly it is Toronto's contention that the amount provided for upgrading the age and quality of significant amounts of their old space has been far less than adequate.

It seems therefore that the most appropriate recommendations would be that (1) cyclic renewal allowance should be calculated as 2.7% of real inventory (NASF) at current unit costs per NASF, and (2) any additional funds to provide for upgrading for age and quality of space 40 years old or older should be over and above this 2.7%. Also, it should be understood that the component percentages used to estimate total cyclic renewal percentage are not to be interpreted as component standards, i.e. cyclic renewal funds may be spent by universities as desired so long as the projects come under the approved definitions. As noted in the brief, the allowance should be cumulative. It should also be noted that in order to plan sensibly it is essential that universities have adequate notice of the availability and amount of cyclic renewal funds.

Yours truly,

SLH:ib

enclosures

ITEM 1

Ontario University Requirements for Cyclic Renewal Funds

Prepared by the COU Committee on Capital Financing for the Council of Ontario Universities

November 27, 1973.

The Interim Capital Formula introduced in 1969 was primarily directed toward providing additional new space to accommodate increased enrolments which had been rising steadily during the decade. The Interim Formula was revised in 1970 and 1971 to make provisions for the age and quality of buildings (the age-quality allowance) and the need to alter and renovate buildings (the cyclic renewal allowance). These introductions were regarded as secondary features of the formula (since their development took place while enrolments were still rising) and, as such, were based on rather tentative assumptions.

As enrolments have levelled off, the size of physical plants has more or less stabilized. The cyclic renewal allowance has assumed increased importance since it provides the major continuing source of capital funds for keeping the physical plant in good repair and for performing alterations to suit changes in use made necessary by enrolment shifts and changing academic requirements. In view of this, the COU Committee on Capital Financing asked its Task Force on Life Costs to also examine problems related to cyclic renewal and the adequacy of the present allowance of 1% of the allocation inventory valued at $55 per net assignable square foot plus current cumulative formula cash flow. The Task Force's principle findings have been taken into account for the development of this paper.

On October 13, 1971, representatives of the Ministry of Colleges and Universities presented an informal working paper to a meeting of the Ontario Association of Physical Plant and Planning Administrators. In this paper the purpose of cyclic renewal was described:

> This additional allowance to the Formula inserts an amount each year into the total cumulative entitlement to cover the cost of alteration and allow for depreciation, obsolescence and eventual replacement.

Working from this and from comments from OAPPPA representatives, the Task Force on Life Costs began its study of cyclic renewal. It concluded that the cyclic renewal allowance should provide funds adequate to cover all costs related to the provision of physical facilities except the following:

(a) New facilities made necessary by increased enrolment, i.e. overall university enrolment.

(b) Site acquisition and other costs presently covered by the non-formula portion of the interim formula.

(c) Normal maintenance and minor repairs which are to be funded from operating budgets.

Five components of cyclic renewal are identified:

(1) Renovations Component

Major repairs to and replacement of building elements, such as roofing, mechanical systems, made necessary by normal use and deterioration.

(2) Alterations Component

Remodelling to accommodate user requirements resulting from changes in occupancy, use or academic requirements.

(3) Code Component

Work involving extraordinary expenditures forced on a university by circumstances over which it has no control, when not carried out as part of another project under components 1 or 2.

(4) Equipment Component

Replacement of major non-building equipment such as audio-visual, instructional and research equipment in scientific and other special purpose laboratories or spaces.

(5) Furniture Component

Replacement of furniture.

The Task Force rejected inclusion of the cost of replacement of outmoded buildings as a component of the cyclic renewal allowance. It was thought that this should not be included because of the high level of uncertainty regarding the timing and size of such costs. A better way of allowing for this is by reducing the university's allocation inventory when a building is demolished and taken out of service.

The renovations component was estimated using a theoretical approach based on the average costs, expressed as percentages of the total

project costs, of the major elements and sub-elements of the six representative university buildings whose building costs were analyzed in Building Blocks Volume 4. Physical plant staff at a number of universities were then asked to select a typical building which would represent the construction norm for that campus and to determine for each element and sub-element what percentage of the element would need to be replaced during the life of a building and at what age that percentage would be replaced. From this sample a profile of renovations costs was built up, average annual percentage costs were calculated, and an annual allowance was derived. By this approach the Task Force estimated that an annual allowance of from 1% to 2.5% was needed for this component.

To estimate the alterations component, the universities were asked to submit data on funds spent on alterations over a number of years. Data covering the period from 1965 to 1972 were obtained from ten universities and the Task Force estimated that an average allowance for this component of from 0.51% to 0.62% was needed.

The Task Force attempted to arrive at a figure for this equipment component allowance by analyzing the lists of equipment purchased for

seven new building projects. For each building, the useful life of each piece of equipment was assessed and the replacement costs were calculated over an assumed building life of 60 years. The Task Force concluded that an annual allowance of from 0.80% to 1.06% was needed for this component.

Using a similar methodology, the Task Force estimated that an allowance of from 0.36% to 0.50% was needed for the furniture component.

The Task Force recognized that under the current rules formula funds can be used to purchase furniture and equipment when these are included as part of a new building, an alteration, or a renovation project, but not if the replacement of obsolete or worn out equipment or furniture is a separate project. The figures derived above are based on the assumption that this distinction will no longer be applied. If it continues to be applied, new and lower figures would have to be derived to cover only that portion of furniture and equipment replacements which is likely to form part of an alteration or renovation project.

No allowance was derived for the code component as it was felt that such costs, if they were not carried out as part of an alteration and/or renovation project, could best be handled by special application for financial assistance.

Summing the individual components:

	Low	High
Renovations	1.00%	2.50%
Alterations	.51	.62
Equipment	.80	1.06
Furniture	.36	.50
Total	2.67%	4.68%

In view of the evidence presented in the report of the Task Force the Committee on Capital Financing recommends that allowance for cyclic renewal should be immediately increased from 1% to an interim figure of 2.7%, pending the results of further studies.

This allowance should be calculated on the building inventory without reduction by the application of the age-quality discount. Using the present square foot cost factor the cyclic renewal allowance would then be real inventory in net assignable square feet X 0.027 X $55. A portion of this allowance should also apply to leased space. In addition, the cyclic renewal allowance should be accumulative, i.e., if a university chooses not to spend its allowance in a given year this allowance will be added to its entitlement. The cyclic renewal

allowance should be made available to universities irrespective of the availability of entitlement or funds under the enrolment component of the capital formula.

The Task Force did not examine the adequacy of the age-quality discount in achieving the objective of bringing all buildings to the same standard. The Task Force proceeded on the assumption that the existing age-quality discount or some future variant of it would satisfy this requirement and derived figures for cyclic renewal which were intended to be applied to all universities equally. The Committee on Capital Financing supports this view and would suggest that the question of the adequacy of the age-quality allowance be considered separately from the question of the cyclic renewal allowance.

In order to plan sensibly it is essential that universities receive adequate notice of the availability and amount of funds for cyclic renewal.

Recommendations

On the basis of the above conclusions, the Task Force makes the following recommendations on the subject of cyclical renewal.

Recommendation No. 1

For the purposes of the capital formula, the term cyclical renewal should cover the four components - renovations, alterations, equipment and furniture - as defined in this report.

Recommendation No. 2

The methodology employed by the Task Force should be used as a basis for the derivation of an appropriate allowance for cyclical renewal.

Recommendation No. 3

On the basis of the conclusions drawn from the data and methodology used by the Task Force, consideration should be given to increasing the current allowance for cyclical renewal.

Recommendation No. 4

MCU policy regarding the funding of equipment and furniture replacement for reasons of obsolescence should be changed, to include this under the conditions of the capital formula, with appropriate modification to the operating formula.

Recommendation No. 5

There should be annual reassessments of the values of all the parameters used in the cyclical renewal entitlement calculations, i.e. the percentage allowance and the dollar per square foot allowance, in order that the universities can properly maintain their facilities in the face of general price increases.

Recommendation No. 6

All universities should be urged by the Council of Ontario Universities and the Ministry of Colleges and Universities to devote sufficient time and money to derive a more detailed analysis of the cost of the components identified by the Task Force and particularly to a more detailed analysis of alterations costs.

Recommendation No. 7

A further task force including a membership drawn from the universities, the colleges, and the Ministry be established in order to carry out more investigations of cyclical renewal costs particularly the study of more actual buildings in order to better assess renovations, equipment and furniture replacements, and the necessary modification resulting from Recommendation No. 4.

Recommendation No. 8

The cyclical renewal allowance should apply to the entire space inventory of an institution including leased space, albeit at a reduced level* The appropriate reduction in the level of the allowance for leased space should be a subject for study by the Task Force referred to above.

Recommendation No. 9

Projects involving only the code component should be reviewed and approved by the Ministry on a project by project basis outside the cyclical renewal formula. It is to be expected that in most cases such work would be made part of a project involving other alterations and/or renovations.

Recommendation No. 10

The cyclical renewal formula should not include reference to the demolition of buildings. This should be handled by an appropriate reduction in the university's allocation inventory.

* Excluding residential space

ITEM 3

January 14, 1974.

Report on Building Life Costs
Cyclical Renewal Section
Comments by the University of Toronto

Summary

It is considered that the renovation, furniture and equipment components should only be funded from cyclical renewal when they are included in the alteration component*; that the Task Force definition of alterations should be amended as set out below and that, for the University of Toronto, an interim allowance for Cyclical Renewal as defined by the amendments herein of 2% plus funds for code changes would be reasonable.

What follows is an elaboration on the preceding paragraph and comments on each of the recommendations of the report.

Recommendation 1

Renovations, furniture and equipment should only be funded from cyclical renewal when they are included in the alteration component. Thus the term cyclical renewal would cover only the alteration component as defined below.

Alterations:

"The work requirement arising from changes in the environmental requirements of the users; because users engage in new and different work, from the need to accommodate additional users in the same area, from assignment of the area to new groups of users, from changing expectations of staff and students as individuals and from the need to meet mandatory fire, safety and other building regulations of the Province and the municipality. In addition to the work requirement as defined above any maintenance work which would logically be part of an Alteration Component project would be included as part of an alteration project as would equipment and furniture required to make the project fully operational."

The adoption of this definition would eliminate the problem in collecting costs and in forecasting future costs, and of breaking down actual project costs into five components.

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* as defined below.

With regard to the deletion of renovations as a separate component from cyclical renewal it is considered that the work referred to under Renovations, except where it is included as part of a project falling under alterations as defined above, is maintenance and should be funded from the operating budget.

The reasons for this view are:

a) During the life of our University such work has been considered as maintenance and funded from the operating budget. There has not been in the past, nor does there appear to be now any reason to change an arrangement which has apparently been satisfactory to both the Government and the University.

b) We believe that if the work now considered as maintenance and currently funded from the operating budget were to be considered capital and funded from cyclical renewal the University's position with respect to planning and funding of work would be worsened. Each maintenance project, if funded from capital, would require an application to Queen's Park and work could only be planned on the basis of specific answers to particular requests. Scheduling and forward planning would be more difficult than under the operating budget funding.

c) We do not subscribe to the reasoning that a maintenance job by virtue of its size should become a capital expenditure. The original capital investment is the total building and is the total building which is being maintained. Each maintenance job described in the parlance of the industry as "major" invariably represents only a very small percentage of the total building costs. These jobs and the smaller ones, if properly done at appropriate intervals, will maintain a building capable of serving almost indefinitely the functions for which it was originally designed.

The reasoning for deletion of furniture and equipment is set out in comments under Recommendation 4.

Recommendation 2

Comments are confined to the alteration component as amended above. The report refers on page 2.17 to some of the factors which effect the attempt to determine a percentage for the alteration component.

It is suggested that one way of assessing the impact of these factors, and any others not identified is to confine the base for the determination of a percentage to the oldest buildings within the system. This method would indicate in terms of actual experience the level of expenditures likely to be required on the existing young buildings many years hence. To include the experience of young buildings in determining the percentages dilutes the percentages thus determined to the extent that the experience of young buildings does not at this point in time reflect costs of changing requirements arising out of age as described in the amended definition of alterations.

Recommendation 3

It is agreed that the current allowance for cyclical renewal should be increased. It is the view of the University of Toronto that an interim allowance of 2% (based on amended definition of cyclical renewal under comment on Recommendation 1) plus funds for code changes would be reasonable.

Recommendation 4

It is considered that furniture and equipment should not be included in cyclical renewal. This view arises from the circumstance that these items have traditionally been carried in operating expenses and our experience does not suggest any need for change. However, where furniture and equipment are included in the alteration component as set out under the amended definition in the comment on Recommendation 1 funding should be from cyclical renewal. A further consideration is that it would seem most unwise to open, on the basis of furniture and equipment matters, negotiations for a change in the formula for operating funds.

Recommendation 5

Agree. There should be an automatic adjustment of the $55 per NASF square foot allowance to reflect building cost changes.

Recommendation 6

Agree.

Recommendation 7

Agree subject to comments under Recommendation 1 and Recommendation 4.

Recommendation 8

Agree.

Recommendation 9

Agree.

Recommendation 10

It is considered essential that the Universities have the option of replacing rather than altering should such action appear in the best overall interests of the University, i.e., it is conceivable that a number of alterations in smaller older buildings would be less desirable from the University's standpoint than the construction of a single more efficient building replacing the older ones.

ITEM 4

The University of Toronto was unable within the time available to respond to the request for information as to renovation and alteration costs in the format established by the Task Force. Since 1963 the University of Toronto has carried out hundreds of renovation or alteration projects, most financed by University funds. In almost all cases the alteration projects were confined to updating small areas of academic buildings or represented alteration of old houses or other buildings for temporary academic use. The projects were not documented for submission to MCU. Their analysis to provide information in the form requested could not have been completed within several months and would have been of doubtful relevance to the Task Force Study. The University of Toronto has approximately 800,000 NASF of space which is over 40 years old and is unrenovated and unaltered to provide a modern and, by today's standards, acceptable environment and to conform to current fire safety regulations.

The University of Toronto does not consider that the Renovation Component, defined as major repairs to and replacement of building elements, such as roofing, mechanical systems, made necessary by normal use and deterioration, is one which should be a capital expense. They do not subscribe to the reasoning that a maintenance job by virtue of its size should become a capital expenditure. Each maintenance job described as major invariably represents only a very small percentage of the total building costs. These jobs, and smaller ones, if properly done at appropriate intervals, will maintain a building capable of serving almost indefinitely the functions for which it was originally designed.

It is their view that the definition of the Alterations Component does not include the important matter of obsolescence. In their opinion the definition of this component should read as follows:

> The work requirement arising from changes in the environmental requirements of the users; because users engage in new and different work, from the need to accommodate additional users in the same area, from the assignment of the area to new groups of users, from changing expectations of staff and students as individuals and from the need to meet mandatory fire, safety and other building regulations of the Province and the municipality. In addition to the work requirement as defined above any maintenance work which would logically be part of an Alteration Component project would

be included as part of an alteration project as would equipment and furniture required to make the project fully operational.

In its submission to the Committee on University Affairs the University of Toronto noted the age-quality and cyclical renewal allowances necessary to alter and renovate four of its academic buildings. In two buildings the first stages of work have been completed. The University and their architects have reviewed and updated the project cost estimates and have allocated the costs to renovation, alteration and code requirements changes as defined in the Task Force Report. The undernoted table sets out the yearly percentage allowances, based on a $55 per NASF building cost, which would have had to be generated over the life of three of these buildings, as either age-quality discount or cyclical renewal, to fund each of the three components of the projects. The percentage allowances arrived at relate only to the costs of the renovation and alteration projects now in prospect. The allowances do not take into account other alteration or renovation work that may have taken place in prior years and for which no records are available.

Percentage Allowance (over Life of Building) required for:

Building	Renovations	Alterations	Code Changes	Total of Components
University College (in progress)	1.01%	0.85%	1.14%	3.00%
Wallberg Building (in progress)	1.73%	1.01%	0.40%	3.14%
Sandford Fleming Building (future)	0.65%	0.65%	0.31%	1.61%
Average	1.13%	0.84%	0.62%	2.59%

To arrive at the allowance percentages noted the University of Toronto first calculated the dollar entitlement generated at 1% per year, for the actual building area being altered, taking into account the different ages of building stages, up to four in one building. The funding entitlement thus generated was then compared to the estimated actual cost to carry out each of the three project components to determine the percentage allowance necessary to fund each component.

The Sigmund Samuel Library costs are not included in the table. The allowance rate necessary for the Sigmund Samuel Library project is misleading when considered in relationship to older buildings. The Library was built in three stages (1892 - 1912 - 1954) with the nineteen year old portion comprising 68% of the building area. The funds generated by that particular area greatly exceed the costs of alterations in that area with the result that the heavier costs of altering the older building areas are masked.

January 9, 1974.

APPENDIX B

BRIEF TO THE

ONTARIO COUNCIL ON UNIVERSITY AFFAIRS

CAPITAL FINANCING:

FUNDING BY FORMULA AND CYCLIC RENEWAL

Council of Ontario Universities

Conseil des Universités de l'Ontario

130 St. George Street, Suite 8039

Toronto, Ontario M5S 2T4

October 1974

74 - 20

Introduction

In November 1972 the Hon. Jack McNie announced in the Legislature the imposition of a capital freeze which later took effect as a moratorium on new capital construction and the deferral of the application of interim capital formula entitlements, including the cyclical renewal allowance for the universities of Ontario. A letter of April 11th, 1974, from the present Minister of Colleges and Universities indicates that the moratorium and deferral will continue for the year 1974-75 with no suggestion as to when a change in policy might be expected. It seems timely therefore to review briefly the history of the capital financing of Ontario universities, to consider the elements of a satisfactory formula, to assess the current situation and the implications of a continuance of the capital freeze and to make some decisions concerning future action. This paper will address itself to these topics in the order listed.

A Brief History

During the 1950's and possibly prior to that time, the universities made application periodically and individually to the provincial government for grants to cover or assist capital expenditures. There were other granting agencies as well and there continued to be private support. The resulting capital income stream was not related to need by any objective formula.

In the early 1960's the provincial grants grew larger and, with them, concern over the projected demands on the public purse arising out of anticipated enrolment. In 1964, the Department of University Affairs was established and began with the assistance of the Advisory Committee on University Affairs a review of financing both operating and capital. The government was under pressure to develop an objective method for determining the magnitude of the need for capital funds and equitable distribution of the funds. This led to the introduction of the first of what might be called 'formula' methods effective July 1st, 1964. Five categories of space were defined, four of which were eligible for capital support at varying levels on a project-by-project approval basis.

Type of Project	Level of Support
Academic	85% of approved project cost
Administrative	85% of approved project cost
Student Services	50% of approved project cost
Residences	20% of approved project cost
Ancillaries, Athletic Facilities, etc.	Nil

In March of 1968, the support level was raised to 95% and athletic facilities made eligible for this support as well. The method still did not allay concerns about the validity of the need, the efficiency in the use of existing space, nor the equity of the distribution of the support.

It was in this context in late 1967 that the consulting firm of Taylor, Lieberfeld, and Heldman (TLH) was retained jointly by the Committee of Presidents of Ontario Universities and the Committee on University Affairs to produce an inventory of university space in the province, to collect data on its utilization and to recommend space and utilization standards. It was expected that this survey called 'The Ontario Universities Physical Resources Study' (OUPRS) would be completed within a year or two but, in fact, the final report was ready only in late 1972 and was distributed to the universities in the spring of 1973.

When it became clear that the OUPRS would take more time than originally anticipated, and because of the urgent need for a more objective instrument, a formula called 'The Interim Capital Formula' was devised and instituted effective April 1st, 1969. The formula was intended to cover all students except those in the Health Sciences and Education and was based on an allowance of 130 N.A.S.F.* (net assignable square feet) per full-time student as an average for the province and a cost allowance of $55 per N.A.S.F. as an average for new buildings completely furnished and equipped. The cost allowance was arrived at by reviewing the unit costs of some 400 projects financed during the previous six years and was below the average for university buildings up to that time. Students were weighted by discipline and level using factors of 1.0, 1.5, 2.0, 3.0, 4.0 times actual numbers. The space allowance was formally stated as 96 N.A.S.F. per weighted student. A university's entitlement to space could be forecasted using projected weighted enrolment figures, and entitlement to funds calculated by applying the unit cost figure to the difference between projected

* Usable space excluding corridors, stairs, entrance foyers, etc.

space entitlement and the space currently available. Separate applications were required for each project and funding was conditional on project-by-project approval. Application could be made for additional so-called non-formula funds to cover special items such as site acquisition and development.

Subsequent to its introduction, the Interim Formula was revised to provide increased allowances for part-time students and for cyclic renewal, and actual space inventories were reduced by an age-quality discount to produce hypothetical base figures for use in calculating entitlement for funds.

The age-quality discount was intended to be a one-time allowance to offset the fact that available space in older buildings was generally less capable of being efficiently utilized than newer space. The discount varies with the age of the buildings and theoretically provided a cash entitlement either to upgrade the old building physically to some standard approaching new space, or to provide replacement or additional space to compensate for the lower utilization.

The purpose of the cyclic renewal allowance was stated informally by representatives of the Ministry to be "to cover the cost of alteration and allow for depreciation, obsolescence and eventual replacement." Subsequent discussion brought out the position that the allowance was not intended to cover replacement. The calculation of the cyclic renewal allowance was somewhat complicated but it approximated a specified percentage (1%) of the value of the current physical plant.

While the university system was expanding and generating entitlement for additional new space, by reason of increasing enrolment, the cyclic renewal allowance was of secondary importance. Once enrolment growth moderated, however, it became all-important as it provided the only source of funds outside of operating income to adjust the physical plant to meet shifts in student preferences within a nearly constant total enrolment and to make major renovations.

The freeze on capital funds initiated in 1972 included the funds generated by the cyclic renewal provision of the Interim Capital Formula. Since that time, funds have been made available in very reduced amounts for committed projects, emergency or extremely urgent alteration or renovation projects and recently for some new projects. These funds have been less than adequate to meet the need and become available by a process which makes it very difficult

to plan ahead in a rational way.

Before concluding this brief history, some mention of the number and nature of the studies related to capital financing seems in order.

The jointly sponsored OUPRS came at a period when the universities varied greatly as to development in space inventory and management techniques. It focused attention on effective utilization, introduced a classification and coding scheme which MCU and some universities have continued to use, produced a space inventory for the Ontario system and finally came up with recommended space and utilization standards. It suffered from being the first such study but in spite of its inadequacies and short-comings it did provide a basis for later and more careful work.

The Ministry has done a number of studies, many of them for use either within the Ministry or by CUA. Perhaps the best known is the study on the costs of university and some non-university buildings which appeared in a preliminary and later final version.

COU has sponsored a considerable amount of work mainly through the vehicle of task forces of the COU Committee on Capital Financing. This work has benefited from following after the studies referred to above and from the availability of more recent and generally more complete and reliable data. The first four volumes of a series known as Building Blocks were published in 1972, two additional volumes have appeared since, and currently a task force and two committees are still at work in this area. (See Appendix I for a list of these studies.) This series has been produced as part of a continuing effort to provide a sound basis for any future developments in formula financing on the capital side and to provide useful information and guidelines for individual universities as well.

Elements of a Capital Financing Scheme

To fully appreciate an assessment of the current situation with respect to capital financing one must first consider the main features of a formula-based scheme.

There are five elements to a formula-based financing scheme. This

is the case under the Interim Formula and would seem to be necessary under future schemes.

1. Inventory of Existing Space: In order to determine the needs for additional space or funds in the future, it is necessary to have data on what currently exists. For purposes of comparison among individual institutions or among different jurisdictions, for in-depth studies of requirements and for other reasons, it is necessary to subdivide the inventory into a number of broad categories or classes. These may be further subdivided almost indefinitely. The degree to which the subdivision is carried depends on the use to which the data will be put. It is important to define the categories and their subdivisions very carefully if meaningful analysis and comparisons are to be made. For convenience in the storage, extraction and analysis of data a coding system is needed, but this is a purely technical problem and not nearly so vital as the categorization or classification scheme.

2. Input Measure(s) or Proxies for Need: For a workable formula a relatively small number of measures must be found which are highly correlated with the need for space in aggregate or for particular categories of space. The ultimate in simplicity would result if aggregate space needs were linearly related to full-time students only or even to full-time equivalent students. Full-time students or full-time equivalent students would then be the single input measure required and by projecting this into the future forecasts of space needs could be made. Unfortunately, the correlation is not good enough and to achieve reasonable precision a number of input measures are needed.

3. Space Standards: A space standard may simply be a measure of the space needed to accommodate a thing, such as a library book, or a person (e.g., a faculty member in his office), without regard to the utilization of that space. Other standards may incorporate implicit statements as to the degree of utilization the space is expected to achieve. Standards for classrooms, teaching laboratories, dining halls and the like are usually of this latter type. If the utilization implicit in the standard is not achieved, then space provided in accordance with the standard will not suffice.

It would be convenient if the space standards for various categories

of space combined in such a way as to produce an aggregate single per-student factor identical for every university. This is not the case, however, so it is necessary to have standards for different categories of space. How many standards and categories is a matter of judgement as to when a reasonable compromise has been reached between precision on the one hand and practicality on the other.

4. Cost Factors: Unit or per square foot costs can be derived for space expressed in terms of gross square feet, net square feet, or net assignable square feet and may include all costs including fees, furniture, and equipment or some subset of these. The Interim Formula introduced a single average total cost per net assignable square foot. In actual fact, different kinds of space have different unit costs and again it is a matter of judgement as to the number of categories and cost factors which should be introduced.

In principle then, a formula-based scheme permits the calculation of space entitlement at any given point in time by multiplying the projected values of the input measure or measures by the appropriate space factor or factors. An examination of the difference between space entitlement and the current space inventory will then reveal whether the system or an individual institution is in need of additional space or has a surplus and, hence, a capacity for increased enrolment. If the former, the cash entitlement for the construction of new space can be calculated by multiplying the entitlement for new space by the appropriate cost factor or factors. The first four elements of a formula-based scheme are thus used to determine whether more space is required to meet future needs and, if so, at what cost. It should be noted here that when a formula system is first introduced it is necessary to consider disparities in age and quality of space, the stage of development of the university, etc., and make appropriate adjustments to reflect the differences.

This still leaves open the question of the capital costs associated with alterations and renovations to existing facilities. Changing social demands, student preferences, new techniques and technologies all require adaptation of the physical plant even in the context of level enrolments. Major building subsystems wear out and must be replaced. Code changes also generate a need for funds. Thus the fifth and final element in a formula scheme is a cyclic renewal allowance.

5. Cyclic Renewal Allowance: The problems associated with forecasting the need for future alterations and renovations and the resulting costs are complex, difficult and largely unexplored. Studies sponsored by COU have begun this exploration and the work continues. The Interim Capital Formula provides an annual allowance of 1% of "inventory value."* The simplicity of this approach, if not the amount, is very attractive and the COU Task Force on Life Costs has recommended that it be continued until such time as an improved method can be developed. However COU has previously demonstrated that the figure should be at least 2.7%. A careful definition of what is to be included within the term cyclic renewal and a realistic value for the percentage factor are required, however, and the Task Force has made recommendations on both these points.

Current Situation

An analysis of the current situation can be split into three separate but related parts suggested by the questions: How adequate are the present physical facilities? How adequate are current levels of capital financing? Do we have the basis for a satisfactory formula financing scheme?

1. Adequacy of Present Facilities A complete assessment of the adequacy of existing space would require an examination of the total space, the distribution and mix of spaces and the quality of the space. Total space is the easiest to deal with and frequently is the only one that is examined.

Building Blocks' standards include the Health Sciences and Education. The Taylor, Lieberfeld, Heldman and Interim Capital Formula standards exclude these programmes. The average standard in Building Blocks is somewhat tighter than the standard recommended by Taylor, Lieberfeld, Heldman and the standard implicit in the Interim Capital Formula if allowance for the differences is made.** Figures produced by the Standing Subcommittee on

* The actual derivation is somewhat more complicated than this suggests.

** In developing the Interim Capital Formula, basic standards of 140 and 130 N.A.S.F. per FT student were considered with the final decision in favour of the latter. It should be pointed out, however, that the standard of 130 was selected as a conservative average; it is likely that recent shifts in enrolment toward higher-weighted programmes have increased the real average per student to above 130. Further, the Interim Capital Formula is applied against a discounted inventory which is about 4 N.A.S.F. per F.T.E. student less than the real inventory average.

The recommendations of Taylor, Lieberfeld and Heldman, the consultants for

Space Standards (Committee on Capital Financing) show a real inventory average of 140 N.A.S.F. per F.T.E. student excluding central utility space. (This space is not normally considered assignable space.) Thus, on the basis of total space only and ignoring questions of distribution, mix and quality, the system had a surplus of less than 3% in 1972-73 when measured against the Building Blocks standard (and no surplus if measured against the TLH recommendation). The growth in F.T.E. students from 1972-73 through 1974-75 is expected to be at least 10% implying a system space deficit of about 7% in the fall of 1974. Even if the freeze on capital funds for new space were to be removed effective April 1975 any approved new space is unlikely to become available for use before the fall of 1977. Thus, with expected growth in 1975 and 1976, the system deficit may reach 15% before new space becomes available.

The current situation with respect to the distribution of space among institutions is difficult to portray in a simple format. Our most recent calculations using the standards of the Building Blocks series indicate some shortages and some surpluses. Enrolment increases will hopefully, in due course, take care of the surpluses, though rarely do the surpluses match the programmes that could use them. The shortages may have to be the subject of special solutions.

Age is possibly the easiest though not necessarily the most infallible proxy to use in judging quality. Although we do not have an accurate up-to-date measure of age distribution centrally the situation in 1969 according to TLH ranged from one institution with practically all of its space under ten years of age to the other extreme of another with only about 35% under ten years of age and 50% over fifty years of age. For the entire system at this time probably 10% of the space is over forty years of age. The distribution of space in the quality sense is by no means even with high

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Footnote continued.

OUPRS, are equivalent to 132 N.A.S.F. per F.T.E. student after applying their adjustment indices. The shortcomings of their report are detailed in the COU report, Review of Recommendations Contained in Ontario Universities' Physical Resources Study with Summarized Responses from Individual University Submissions, April 2, 1974. One in particular is relevant here. When corrected for an apparent error in the calculation of a standard for library space the TLH overall standard becomes approximately 141. Finally, the use of standards in Building Blocks as currently printed yields a figure of 135 N.A.S.F. Revisions now under consideration following a careful review of the component standards in Building Blocks would raise this to 136.4.

concentrations of older space at particular institutions.

The overall space picture then is one of a system now in deficit in terms of availability of total space, with a distribution among and within institutions requiring adjustment, and a need to correct the unevenness in the quality of space across the system.

2. Adequacy of Current Funding Regarding funding, the freeze on all capital funds makes it progressively more difficult to devise a satisfactory solution for capital financing of the university system. The current situation is made particularly acute because of the freeze on cyclic renewal funds. The cyclic renewal funds provide the only source outside of operating income for making adjustments to the existing facilities. They can be applied in the manner most needed at each institution. The new institutions may need the funds for improving any mismatch between facilities and programmes; older institutions may need the funds more for upgrading the quality of space; some may actually need additional facilities.

To summarize, the present facilities constitute a system roughly balanced in terms of total space in 1974, with an expected deficit of some 15% by 1977. The immediate need is to renew a flow of capital funds, however minimal, so that the institutions can meet their most urgent priorities, whether these be adaptation, renewal or addition of facilities.

3. Basis for a Formula Financing Scheme The Ontario system would seem to be in a very good position to proceed to the next stage of a formula-based capital financing scheme either through the further development of the Interim Formula model or an alternative to it.

A space inventory now exists and this could be updated and made more comparable, institution-to-institution, through the use of the modified classification scheme soon to be recommended to COU by its working committees. Coding problems have been under study as well and workable solutions found.

The Building Blocks series provides a complete and carefully developed set of space and utilization standards including Health Sciences and Education. With the addition of space demand factors for the various

programmes in the system, the space and utilization standards together with appropriate cost factors could be used to revise and refine the capital weights if it is decided to remain with the Interim Formula model. Alternatively, these standards could be applied directly to the input measures introduced in the Building Blocks series to produce an objective assessment of the need for space which could then be converted to the need for funds using appropriate cost factors.

The Ministry study of building costs and the more recent COU studies provide a basis for the establishment of an updated average cost factor, if it is decided to continue with the model of the Interim Formula. Alternatively a small number of cost factors appropriate for different categories of space could be developed.

Work continues on the complex question of the life costs of buildings but progress so far should make possible a more objective and less arbitrary, though likely still interim, solution to the vexing question of cyclic renewal and age-quality allowance.

In summary then, the quality and completeness of the statistical base, the analysis of space and its utilization, knowledge concerning capital costs for new space and, to a lesser extent, for improvement of existing space, are all significantly greater than in 1968 when the Interim Formula was devised. It should therefore be quite possible to develop a formula-based capital financing scheme which would be substantially better than the Interim Formula. No formula-based scheme should be considered to be final, however, only the best currently possible given the present state of the art.

Implications of Continuing the Moratorium

During the growth period of the sixties, Ontario developed a system of universities which in physical terms (the primary concern of this paper) is on a par with the best in the developed countries. This was done at considerable effort and at great cost to the taxpayers. The investment in physical plant is of the order of one billion dollars. This is an investment and an accomplishment which must be protected not just in the sense of maintaining the buildings as they are but by adapting them to new and changing conditions and by replacing

them when necessary with others more appropriate to current and future needs. During the sixties, the necessary flexibility and adaptability came about in large part naturally and easily as a result of much new construction. Levelling enrolment do not justify, except in some special cases, the magnitude of expansion required to adjust to changing needs. The moratorium and the deferral of cyclic renewal funds has reduced the adaptability of the system in physical terms almost to nil. Surely history is replete with examples of the fate of organisms or systems which failed to adapt.

University physical plants of necessity must be expanded in finite steps. Most institutions were planning for a reasonable fit of the physical plant to the enrolment mix forecast for the late seventies or early eighties. The earlier-than-predicted slowing of enrolment growth has left some institutions with less than adequate facilities for certain functions or programmes and a surplus of space for other functions or programmes. There is therefore a need for funds to adjust. A few institutions have continued to experience a significant rate of growth and now need additional facilities. Finally, buildings and building subsystems wear out and must be replaced. The sums required are beyond the means of many institutions to finance out of operating income.

The implications of continuing the current freeze on capital are clearly a system which in physical terms remains static in the context of a highly dynamic environment with all the unfortunate consequences which follow from that, a system which cannot correct for even current imbalances, and a system in which some elements are in danger of deterioration because individual institutions lack the funds to pay for major renovations or replacements.

Recommendations

The current freeze on capital funds presumably provides a measure of relief from the severe demands on the provincial purse. It offers no long-term solution to the capital financing of the university system for the remainder of the seventies. If continued much longer it may well make a satisfactory solution more difficult to devise. Therefore, the Committee on Capital

Financing recommends the following:

1. Lift the moratorium on capital funds, including both formula support and cyclic renewal.

2. Develop a revised and improved interim formu[illegible] or other appropriate model for capital financing by i[illegible]rporating the following measures:

   a) Approve and adopt the space classification and coding procedures to be recommended shortly by the Committee on Capital Financing. This will enable the space inventory to be revised and updated. Suitable programmes can be written to translate individual universities' coding systems into the provincial coding systems.

   b) Approve and adopt the space and utilization standards set out in the Building Blocks series (as revised in accord with the Standing Subcommittee's recommendations).

   c) Review and update the MCU and COU cost studies. Derive and adopt appropriate cost factors for use.

   d) Devise and adopt an interim solution to the funding of cyclic renewal pending further studies of life costs.*

   e) Find a solution to the age-quality allowance whether or not the solution is a part of the cyclic renewal formula.

3. Effective communication must be maintained between OCUA and COU in the Capital Finance area, either by a continuation of the Joint Subcommittee or by some other means. Prime consideration would have to be given to identifying and advising on the best methods of proceeding with the implementation of recommendation [illegible] and 2.

If the above are [illegible]mpleted and the universities given adequate notice as to future levels of funding, it will once more become possible to plan the future physical development of the system in an orderly and rational manner.

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* As a starting point see the COU Brief to the Committee on University Affairs, Ontario University Requirements for Cyclic Renewal Funds prepared by the COU Committee on Capital Financing for the Council of Ontario Universities, November 27, 1973.

10/10/74
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Building Blocks

Vol. I - Report of the Task Force - Space and Utilization
Vol. II - Report of the Task Force - Space for Education
Vol. III - Report of the Task Force - Space for Health Sciences
Vol. IV - Report of the Task Force - Building Costs
Vol. V - Report of the Task Force - Building Life Costs

APPENDIX C

BRIEF TO THE

ONTARIO COUNCIL ON UNIVERSITY AFFAIRS

REPORT FROM THE COMMITTEE ON CAPITAL FINANCING: CYCLIC RENEWAL AND THE SPECIAL PROBLEM OF EQUIPMENT

Council of Ontario Universities

Conseil des Universités de l'Ontario

130 St. George Street, Suite 8039

Toronto, Ontario M5S 2T4

August, 1975

75-9

Report from the Committee on Capital Financing

Introduction

The brief entitled Capital Financing: Funding by Formula and Cyclic Renewal presented by COU to OCUA on October 26, 1974, provides a review of developments in the area of capital financing up to that date. The purpose of this paper is to report on progress since that date and to recommend measures designed to assure a more secure basis for determining the level and allocation of capital expenditures.

Cyclic Renewal

The Committee on Capital Financing and COU have repeatedly stressed the importance of maintaining the physical facilities of the Ontario universities and adapting these facilities to meet changing needs. We were gratified to learn that OCUA strongly supported this position and that the government has responded by increasing the funds available for this purpose during the current financial year. Despite the increase in funding and the promise of improved procedures, the level of funds still falls considerably short of needs. In our November 22, 1973 presentation to COU on Ontario University Requirements for Cyclic Renewal Funds*, we recommended that"...allowance for cyclic renewal should be immediately increased from 1% to an interim figure of 2.7% pending the results of further studies". This is essentially the same recommendation as that contained in Building Blocks, Volume 5, Report of the Task Force Building Life Costs.

We have no additional information which would cause us to alter the estimate downwards. Assuming, for the sake of illustration, 18 million NASF for the system at $55 per square foot, the total value of space in 1972 dollars is $990 million;

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* This analysis was subsequently forwarded officially to Dr. Gerstein (CUA) under covering memorandum from B.L. Hansen dated January 24, 1974.

allowing for a conservative inflation estimate at 6%; the replacement value of total university space in 1975 would be $65 per square foot, and total value would be $1.17 billion. Using the recommended 2.7% figure for cyclic renewal the universities would need $32 million for 1975-76. Current levels of funds made available for 1975-76 are $11 million, which still leaves a difference of $21 million that should be spent for cyclic renewal.

We also feel that the procedures still fall considerably short of what is reasonable and rational. The lack of adequate lead-time is still a serious problem, the more so since planning staffs have been reduced in the general economy drive. The construction funds to be available should be announced at least six months before the beginning of summer. The construction and renovation associated with this type of work usually can be done only in the summer months and much planning and preparation is required before work can commence. Further, the procedure whereby the universities submit lists of projects and MCU selects from among these lists those projects which it will approve leaves little autonomy or flexibility to the universities. We would hope that a scheme for the distribution of cyclic renewal funds could be developed which would give institutions some flexibility in choosing which of their urgent projects would go ahead within the funds defined for such purposes by the government.

The Special Problem of Equipment

Whether equipment renewal and replacement is properly an operating or a capital expense is debatable and perhaps unimportant. What is important, however, is that up-to-date functioning equipment and effective control of the physical environment are vital to the instructional and research capability of a university. Moreover,

the replacement of instructional and research equipment, originally funded as part of the capital allocation for buildings, is becoming increasingly urgent. One of the objectives of the Minister, expressed in his statement to the Legislature on November 18, 1974, was the provision of operating support sufficient "to maintain and improve existing levels of service". One has only to read the briefs from individual universities to OCUA to be aware that the physical resources are being adversely affected by the current financial stringency. The effects of this are difficult to measure precisely. Certainly one important effect is the inability of institutions to cope with the costs of purchasing and renovating equipment in order to keep abreast of technological progress. This ability is essential in the scientific disciplines. It is clear that the needed equipment replacement in these disciplines is not being maintained, let alone improved. Since action is needed to correct this situation, one possible alternative would be to define equipment renewal and replacement as a capital cost, and adjust the cyclic renewal funding to cover it.

By way of illustration of equipment renewal needs, Table 1 shows a history of capital project costs and equipment costs taken from the May, 1972 MCU report, University Buildings Space/Cost Data. To project replacement costs an average 12-year equipment life is assumed based on studies done by National Appraisal Consultants Ltd. for the University of Toronto. The results of these studies on a number of pieces of equipment suggest a depreciation low of 4.5%, the majority between 7.5% and 9.5%, and a high of 16.5%. The average was estimated to be 8.5% corresponding to an average life of 11.8 years. Also, a 6% per

annum inflation rate is assumed for the 1964-71 period.* The equipment costs projected for 1976-83 are the projected costs in 1975 dollars to replace the equipment purchased twelve years earlier. These data are then expressed as ratios of 1975 operating revenue and estimated value of the physical plant. The average ratio of equipment $/physical plant value over the 1976-83 period is 0.84. It will be seen immediately that the Building Blocks Volume 5 estimate of a range of ratios of equipment $/physical plant value of 0.80 to 1.06% is reinforced by the analysis. Expressed as a proportion of operating revenue, the average annual increase for equipment replacement would be about 1.5%. In dollar terms the average annual expenditure over the 1976-83 period should be about $10 million.

This, of course, includes only equipment purchased from capital funds. If equipment purchased from operating funds were to be included, the total requirement would be approximately doubled.** Thus, it can be estimated that the combined requirements for all equipment replacement and renewal from both operating and capital would be in the region of $20 million per annum.

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* See above referenced MCU report, pp. 453, for measures of construction escalation costs. Actually the most recent data from Southam Business Publications and Statistics Canada suggest that 6% is far too low. Southam shows 6.3, 17.7, 15.8 and 9.5 for 1972, 73, 74 and 75. Statistics Canada shows 7.9, 10.2 and 13.3 for 1972, 73 and 74.

** The COFO-UO report shows about 3.6% of operating funds for furniture and equipment; it is assumed that about 1.5% of operating funds are expended for equipment.

Recent Developments in COU Space and Utilization Research

1) The Subcommittee on Space Coding and Space Classification has now completed its work.

The space classification scheme of Building Blocks Volume 1 has been revised by the addition of several categories; definitions have been refined; and a glossary written as an aid to the interpretation of the definitions. The scheme meets the needs of both MCU and the universities.

2) The standing Subcommittee on Space Standards has concluded a re-examination of the space and utilization standards recommended in the Building Blocks series. The Subcommittee is satisfied that changes should be made in the case of three categories: Undergraduate Laboratories, Graduate and Research Laboratories, Instructional Offices and Related Space. The changes are in the nature of refinements which would not change significantly the space entitlement for the system as a whole but would make relatively minor changes in the distribution of entitlement among institutions were they adopted and a formula subsequently based on them.

3) The (new) Task Force on Life Costs has started to collect life cost data from one building on each of a number of campuses. The data being collected will assist in the process of defining cost classifications. Commencing in 1976 all universities will be requested to supply data for representative samples of buildings. This will need to be continued for some time before it will be

possible to carry on the necessary analyses and make conclusions about life costs.

4) As an additional project the Task Force had considered undertaking an additional study into techniques, building modifications and procedures related to energy conservation and their cost effectiveness. It lacked the time and resources to do this, however, and at the suggestion of the Task Force, OAPPPA has taken on this study and will no doubt make the findings known in due course.

Special Needs for Additional New or Replacement Space

The freeze on capital funds has created a situation where some universities are almost without or with quite inadequate amounts of certain kinds of facilities. Certain categories of space need to continue to grow irrespective of enrolment. Library space is one example. Some buildings had reached the end of their useful lives at the time of the freeze and more buildings will be added to the list in future. Most important of all are needs closely related to the instructional and research functions of universities.

The Committee understands the reluctance of the government to fund a further general expansion of university facilities given the possibility of level or declining enrolments in the Eighties. But some needs for new or replacement space are becoming serious enough as to justify action. This problem becomes even more acute for those universities which are currently renting space for offices and other uses.

Recommendations

We have demonstrated a need for additional cyclic renewal funds, whether from capital, operating or both, as follows:

1) $21 million to be added to the 1975-76 funds for cyclic renewal of physical plant space. On a pro-rata basis, additional capital funds needed for equipment replacement amount to approximately $7 million.
2) An additional $10 million in operating funds for equipment replacement and renewal.

It would be possible to provide the whole of these additional needs through capital funding. Whatever the source of funds, we recommend strongly that government take these demonstrated needs into account when determining allocation amounts and sources over the next decade.

The capital allocations process now lacks rationality. To make the process more rational, we recommend the following:

1) Funding of cyclic renewal at the level suggested with special attention given to instructional and research equipment.
2) Immediate establishment of a tripartite committee of MCU, OCUA and COU to recommend guidelines, procedures and a timetable for accomplishing recommendations (3) through (8) below.
3) Approval of the space coding and classification procedures to be recommended shortly by the Committee on Capital Financing.
4) Adoption of an agreed-upon set of space and utilization standards for system. We recommend the standards of the Building Blocks series revised in the light of the findings of the Standing Subcommittee.
5) Updating of the universities' space inventories to the present year according to the classification and coding system recommended by the Standing Subcommittee. Suitable programmes can be written to translate universities' coding systems into the standard system.

6) Development of a unit cost escalation index to replace the outdated $55 per NASF value or rational procedures for estimating realistic costs of projects.

7) Studies leading to the development of a rational solution to the age-quality allowance problem.

8) Establishment of guidelines and procedures for including projects on a list of urgent projects and establishing their priority.

8/15/75

TABLE I

TOTAL PROJECT AND EQUIPMENT COSTS
1964-71 WITH A PROJECTION OF REPLACEMENT
REQUIREMENTS 1976-1983

History

YEAR	TOTAL PROJECT COSTS	EQUIPMENT COSTS AS % OF PROJECT COSTS	EQUIPMENT COSTS	EQUIPMENT COSTS AS % OF TOTAL OPERATING REVENUE	EQUIPMENT COSTS AS % OF TOTAL VALUE OF CAPITAL PLANT
1964	$76,925,584	9.00	6,923,302		
1965	51,124,064	8.69	4,442,681		
1966	60,487,501	7.77	4,699,879		
1967	73,049,651	13.57	9,912,838		
1968	92,406,439	5.64	5,211,723		
1969	35,593,468	7.13	2,537,814		
1970	49,223,631	7.48	3,681,928		
1971	40,392,231	3.99	1,611,650		

Source: Capital Support Branch Ministry of Colleges and Universities, Province of Ontario
University Buildings Space/Cost Data, May 1972

Projected Equipment Replacement Costs

1976	13,931,044	2.1%	1.2%
1977	8,939,547	1.4	0.8
1978	9,457,080	1.5	0.8
1979	19,946,578	3.1	1.7
1980	10,487,011	1.6	0.9
1981	5,106,580	0.8	0.4
1982	7,408,763	1.1	0.6
1983	3,242,946	0.5	0.3
Total 1976-83	78,519,549		
Average	9,814,944	1.5%	0.8%

Notes: The equipment costs for the years 1976 through 1983 were calculated by inflating equipment costs twelve years earlier at a rate of 6% per annum. Thus, in 1976 it would take $13,931,044 in 1975 dollars to replace $6,923,302 worth of equipment in 1964. This $13,931,044 represents 2.1% of an assumed 1975 total operating revenue of $670 million and 1.2% of an assumed 1975 total value of physical plant of $1.17 billion. Values for succeeding years were calculated in similar fashion.